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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,004	10/28/2005	Satoru Kobayashi	0099/013001	3827

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SMITH PATENT OFFICE  
1901 PENNSYLVANIA AVENUE N W  
SUITE 901  
WASHINGTON, DC 20006

EXAMINER
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SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/532,004

Applicant(s)

KOBAYASHI ET AL.

Examiner

Jason L. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,4,6,10,11,14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration:
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,10,11,14 and 15 is/are rejected.
- 7) ☒ Claim(s) 14-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-4, 6, 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Tadauchi et al (US 6,673,310).

Tadauchi teaches a lead free solder which forms a joint comprising Zinc and Tin wherein the zinc content is between 30-95 wt% and tin ranges from 70-5 wt% (col. 4, ln. 49-52). Tadauchi further exemplifies two embodiments containing 30 wt% and 60 wt% of zinc wherein the liquid phase temperature is greater than 260°C (col. 11, Table 1, Test Samples 6 and 12).

Regarding the limitations in claims 1, 3, 4, 6 and 10 that the solder contain less than a maximum value of other elements such as nickel, aluminum and copper, Tadauchi teaches that nickel, copper and aluminum in addition to other elements may be blended with the solder material preferably in an amount less than 0.5 wt% to provide the solder in enhanced resistance to deterioration over time (col. 6, ln. 3-18). As such, Tadauchi anticipates the claim limitations wherein the solder contain the

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claimed amounts of nickel, copper and/or aluminum. In the alternative, the addition of the claimed elements in the claimed amounts would have been obvious.

Furthermore, regarding the limitation that the solder contain 'greater than 0' (emphasis added) of the claimed element, a solder of Tadauchi containing 0% of the claimed element would meet the claims. Specific claimed alloy, whose compositions are in such close proportions to those in the prior art that, prima facie one skilled in the art would have expected them to have the same properties, must be considered to have been obvious from known alloys, *Titanium Metals Corporation of America V. Banner*, 227 USPQ 773.

Regarding claim 11, Tadauchi teaches the members joined with the solder include copper (col. 5, ln. 51-58).

### ***Allowable Subject Matter***

Claims 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed 7-24-06 have been fully considered but they are not persuasive.

Applicant argues that Tadauchi teaches a zinc containing solder and fails to disclose a solder without silver and asserts that silver is an essential part of the

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invention described in Tadauchi. Applicant further argues that the solder of the present invention does not contain silver.

However, the limitation that the solder contains (emphasis added) can be interpreted as being open or closed language. Although Applicant appears to be arguing the limitation should be considered as closed language, the Examiner has given the limitation it's broadest reasonable interpretation and viewed the limitation as being open which would not exclude the addition of silver to the solder composition. Should Applicant intend for the language to be closed, the use of conventional language such as 'consisting of' should be used. Furthermore, Tadauchi exemplifies multiple embodiments which contain no silver content (Table 1, Test Samples 6, 9 and 12), as such, Applicant's assertion that silver is essential is not persuasive either.

Applicant further argues that silver combines with tin to generate an intermetallic compound which aggravates the adhesiveness of the solder on the joint interface. This argument is not commensurate in scope with the claims as not intermetallic or adhesiveness properties are claimed.

Applicant also argues that Tadauchi's reason for adding elements such as nickel, copper and aluminum differ from the reasoning for adding the elements in the present invention. However, the claims are drawn to a composition, regardless of the reasoning for the addition of the claimed elements, their addition in the amounts taught by Tadauchi would meet the claim limitations. Furthermore, the solders containing these elements in the amounts recited would inherently exhibit the same ability to control intermetallic compound growth.

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Applicant argues Tadauchi's disclose nickel, copper and aluminum simply by way of example which is included with many other components. Applicant further states that Tadauchi provide no specific advantage of adding such components and it is not clear that the same effect on the solder can be obtained for all of these components. However, Tadauchi teaches the addition of the claimed elements with sufficient specificity as to anticipate the claim limitations.

Applicant next argues that Tadauchi does not teach joining a copper member with the solder and only refer to the generally known fact that it is desirable to remove the oxygen content on the surface of the copper to be soldered. This argument is not persuasive since it is clear that copper is a member which is intended to be bonded with the solder disclosed by Tadauchi.

Applicant further argues that the present invention requires no surface treating such as undercoating the copper material with nickel prior to soldering. This argument is not commensurate in scope with the claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

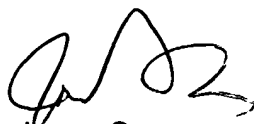
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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jason Savage  
10-12-06

  
JENNIFER C. MCNEIL  
SUPERVISORY PATENT EXAMINER  
10/12/06